

### Claims

5 1. An arrangement for forming a communications network, characterized in that the arrangement comprises several modules which transfer relevant information between each other, each module handling the forming of a part of the network to be formed, a set of the modules, selected for forming the communications network, handling together the forming of the communications network.

10 2. An arrangement according to claim 1, characterized in that the set of the modules is arranged from the bottom module, which forms a physical topology of the network, to the top module, which forms logical connections of the network, so that the modules between the bottom and top module form either physical topologies of the network based on specific technologies, or logical connections of the network based on the specific technologies, each module offering resources for the module above, and each module using resources from the module below.

15 3. An arrangement according to claim 2, characterized in that the distinct bottom module forms physical nodes, conduits, and conduit branches, the conduits containing a number of fibers, wires, or radio links, the physical topology containing line-of-sights information concerning the radio links.

20 4. An arrangement according to claim 2, characterized in that the distinct top module forms MSC and MSC clusters, and capacities of the logical connections.

25 5. An arrangement according to claim 2, characterized in that between the bottom and top modules there is the module which forms logical 2 Mbit/s connection of the network.

30 6. An arrangement according to claim 5, characterized in that the module further forms 2 Mbit/s frame allocation for exchange terminals in a specific BSC, and selects bit templates for each allocation.

7. An arrangement according to claim 2, characterized in that between the bottom and top modules there is the module which forms logical virtual container connections of the network.

35 8. An arrangement according to claim 2, characterized in that between the bottom and top modules there is the module which forms a physical network topology by selecting the equipment used.

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9. An arrangement according to claim 2, characterized in that between the bottom and top modules there is the module which forms a detailed physical network topology in the equipment level by selecting the connections inside equipment, and between equipment.

5 10. An arrangement according to claim 9, characterized in that the module creates the detailed topology automatically.

11. An arrangement according to claim 2, characterized in that the distinct top module forms logical topology of the broadband connections, and capacities of the broadband connections.

10 12. An arrangement according to claim 2, characterized in that the distinct top module forms logical topology of the signaling connections, and capacities of the signaling connections.

13. An arrangement according to claim 2, characterized in that the distinct top module forms logical topology of the PSTN connections, and capacities of the PSTN connections.

15 14. An arrangement according to claim 2, characterized in that the distinct top module forms logical topology of the TETRA connections, and capacities of the TETRA connections.

20 15. An arrangement according to claim 2, characterized in that the distinct top module forms logical topology of the connections of the 3G network, and capacities of the 3G network connections.

16. An arrangement according to claim 2, characterized in that the distinct top module forms logical connections between logical connections of different technologies used.

25 17. An arrangement according to claim 2, characterized in that between the bottom and top module there is the module which forms a physical network topology of lightpaths selecting the equipment used.

30 18. An arrangement according to claim 2, characterized in that between the bottom and top module there is the module which forms the physical network topology of an optical network by selecting the optical cross-connection and WDM equipment used.

19. An arrangement according to claim 2, characterized in that between the bottom and top module there is the module which forms an IP network topology.

35 20. An arrangement according to claim 2, characterized in that between the bottom and top module there is the module which forms an

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ATM network topology by creating virtual circuit connections, virtual path connections, and links between adjacent ATM equipment.

21. An arrangement according to claim 2, characterized in that connections of each module are routed separately to the module below, from bottom to top, so that the first module above the bottom module is routed to the bottom module, the second module above the bottom module is routed to the first module above the bottom module, and so on until the top module is routed to the module below.

22. A method for forming a communications network, characterized in that the method comprises the steps of:

establishing parts of tasks, each part containing a specific technology area to form logical connections of the network, or to form a physical topology of the network,

arranging automatically the parts from the bottom part, which forms a physical topology of the network, to the top part, which forms logical connections of the network, so that the parts between the bottom and top part form either physical topologies of the network based on specific technologies, or logical connections of the network based on specific technologies,

creating topologies and connections in each part,

routing connections of each part separately to the part below, from bottom to top, so that the first part above the bottom part is routed to the bottom part, the second part above the bottom part is routed to the first part above the bottom part, and so on until the top part is routed to the part below.

23. A method according to claim 19, characterized in that the part which automatically forms a detailed physical cellular network topology in the equipment level by selecting the connections inside equipment, and between equipment comprises the steps of:

forming chains or loops of 2Mbit/s logical paths, which paths contain one or more 2Mbit/s frames, from a BSC, clockwise from the view of the BSC,

labeling the 2Mbit/s logical paths clockwise from the view of the BSC, starting from the first frame and ending at the last frame,

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connecting first 2Mbit/s logical path into transceivers, and by-passing the other 2Mbit/s logical paths in the first BTS clockwise from the view of the BSC,

5 connecting second 2Mbit/s logical path into transceivers, and by-passing the other 2Mbit/s logical paths in the second BTS clockwise from the view of the BSC, and so on until

connecting the last 2Mbit/s logical path into transceivers, and by-passing the other 2Mbit/s logical paths in the last BTS clockwise from the view of the BSC.

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